Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 8715.5	**APPROVED BY Signature:**	*Original Signed by*
EFFECTIVE DATE:	August 24, 2004	**NAME:**	Edward J. Weiler
EXPIRATION DATE:	August 24, 2009	**TITLE:**	Director

Responsible Office: 250 / Safety and Environmental Division (S&E)

Title: Fire Protection at GSFC/Greenbelt

PREFACE

P.1 PURPOSE

This directive establishes policies, procedures, and responsibilities for the implementation and management of the Fire Protection Program at the Goddard Space Flight Center (GSFC).

P.2 APPLICABILITY

This directive applies to all GSFC/Greenbelt personnel, facilities, and activities, including all permanent and temporary sites. This directive shall also apply to all GSFC tenant organizations, contractors, grantees, clubs and other persons operating under the auspices of GSFC or on GSFC property as required by law and as directed by contractual, grant, and agreement documents. For this document, the term GSFC shall encompass GSFC, Greenbelt. GSFC managers of other facilities shall develop their own procedures to comply with local requirements and NPR 8715.3, NASA Safety Manual.

P.3 AUTHORITY

a. NPR 8715.3, NASA Safety Manual
b. 29 U.S.C. 668, Section 19 of the Occupational Safety and Health Act of 1970 as amended

P.4 REFERENCES

a. 29 CFR 1910.22 – General Requirements (Walking/Working Surfaces)
b. 29 CFR 1910.38 – Emergency Action Plans
c. 29 CFR 1910.106 – Flammable and Combustible Liquids
d. 29 CFR 1910.157 – Portable Fire Extinguishers
e. National Fire Protection Association (NFPA) 1 – Fire Prevention Code
f. NFPA 10 – Standard for Portable Fire Extinguishers
g. NFPA 30 – Flammable and Combustible Liquids Code
h. NFPA 101 – Life Safety Code
i. NFPA 1141 – Standard for Fire Protection in Planned Building Groups
j. NPR 8715.3, NASA Safety Manual
k. NASA-STD 8719.11 – Fire Protection
l. NASA Form 1627, NASA Mishap Report
m. GSFC Form 23-4 – Hot Work Permit
n. GSFC Form 23-4A – Hot Work Supplemental Log Sheet

o. GSFC Form 23-62 – Emergency Action Plan

P.5 CANCELLATION

GMI 1710.3, Trailer Fire Protection and Safety

P.6 SAFETY

None

P.7 TRAINING

The Safety and Environmental (S&E) Division will work with the Office of Human Resources (OHR) to review training needs and available training courses, so that training is made available to those who need or want it. Records are kept in accordance with Center requirements for training records.

P.8 RECORDS

Record Title	Record Custodian	Retention
Completed Pre-Fire Plan	Facilities Operations Manager (FOM)	Until updated
GSFC Form 23-62, completed Emergency Action Plan	FOM	Until updated.
GSFC Form 23-4, completed Hot Work Permit, with 23-4A, supplemental log sheet	Issuing organization	*NRRS 8/48B.3. Retain for 3 years, then destroy when no longer needed, or when 5 years old, whichever is sooner.

* *NPR 1441.1 – NASA Records Retention Schedules (NRRS)*

P.9 METRICS

None

P.10 DEFINITIONS

a. Authority Having Jurisdiction – A fire protection/safety professional within the S&E Division as defined in NPR 8715.3 and NASA-STD-8719.11.

b. Emergency Action Plan (EAP) – A document prepared using GSFC Form 23-62 that provides emergency information for occupants of all GSFC buildings. An EAP is prepared for each

building, and includes the building's emergency evacuation procedures and other emergency information unique to the building.

c. Pre-Fire Plan – A document prepared by the FOM and updated annually, or sooner if/when significant changes in the facility or hazardous operations occur, that provides information about his/her building for firefighter and rescue personnel. The content of the Pre-Fire Plan is described in NASA-STD 8719.11.

PROCEDURES

1. ROLES AND RESPONSIBILITIES

1.1 S&E Division, Code 250

The S&E Division is in charge of the fire protection engineering program, and is responsible for:

a. Serving as the authority having jurisdiction for approving/concurring in fire protection systems, procedures, and equipment;
b. Review and concurrence of new construction designs/plans;
c. Review and concurrence of Facility modification designs/plans;
d. Concurrence of fire suppression and fire alarm acceptance testing;
e. Inspection of all key GSFC construction sites, including fire safety issues;
f. Consults on Fire Safety;
g. Overview of Hot Work Permit Program, and concurrence on supervisors' designated representatives responsible for issuing hot work permits;
h. Oversight of fire extinguisher program, including working with OHR to provide training to individuals on proper fire extinguisher use;
i. Coordinating with the Facilities Management Division (FMD) for the conduct of annual drills to exercise EAPs of each facility with more than 10 occupants;
j. Providing expert guidance to FOMs in preparation of building Pre-Fire Plans; and
k. Coordinating with facility management for the site familiarization activity for the fire department.

1.2 Security Division, Code 240

The Security Division is responsible for:

a. Coordinating with the S&E Division for the conduct of annual drills to exercise EAPs of each facility with more than 10 occupants;
b. Providing traffic control, crowd control, and damage isolation during a fire incident; and
c. Coordinating with the Prince George's Fire Department resources and command structure to provide them emergency access to all necessary Center information and resources.

1.3 FMD, Code 220

FMD is in charge of development and implementation of the fire prevention program, and is responsible for:

a. Compliance of new construction designs/plans in accordance with NASA, NFPA, and Occupational Safety and Health Administration (OSHA) standards;
b. Facilities advocacy for the construction of fire detection and suppression systems;
c. Coordination of fire suppression and fire alarm acceptance testing;
d. Managing and implementing the fire extinguisher inspection and maintenance program as required by NFPA 10 and 29 CFR 1910.157;
e. Ensuring that permits are obtained for hot work operations;
f. Designating representatives to issue hot work permits;
g. Tracking inspection recommendations through abatement and resolution of failure to abate issues;
h. Serving as focal point for resolution of facility fire safety issues from the fire department and other base personnel;
i. Maintaining all fire protection systems, such as sprinklers, fire alarms, and fire-walls, in accordance with NASA, OSHA, and NFPA standards; and
j. Managing a fire alarm and sprinkler system outage/impairment program.

1.4 FOMs

The FOMs are responsible for:

a. Preparing and implementing building EAP in accordance with 29 CFR 1910.38 and providing training on its implementation to line supervisors. Updating plans as building conditions change;
b. Serving as primary point of contact for matters related to a given building or worksite;
c. Planning and coordinating emergency building evacuations; and
d. Preparing the building Pre-Fire Plan, with guidance from the S&E Division. The FOM will submit the Plan to Codes 240 and 250 annually, and place an updated copy in the fire department information box outside each building.

1.5 Supervisors

GSFC supervisors have responsibility for:

a. Providing training to employees with respect to fire prevention and their building EAP;
b. Complying with recommendations issued by the S&E Division and the fire department in a timely manner;
c. Ensuring that the Emergency Console is called, and that NASA Form 1627 is completed, for every fire incident, including those extinguished by a portable fire extinguisher;
d. Conducting formally scheduled fire prevention inspections of all facilities at least annually, and more frequently for special and high-hazard occupancies;
e. Ensuring that permits are obtained for hot work operations;
f. Designating representatives to issue hot work permits;

g. Ensuring that approvals are obtained for all facility modifications that involve wall changes or fire protection system installation and modification;
h. Notifying GSFC management of inspection findings and recommendations; and
i. Complying with GSFC fire protection/prevention policy.

1.6 All Personnel

All personnel who work at GSFC have the responsibility to comply with GSFC fire protection/prevention requirements.

2. FIRE PROTECTION

2.1 Facility Construction and Modification

Facilities shall be designed consistent with health and safety regulations and standards, including industry best practices. FMD will ensure that there is appropriate health and safety review of facility concepts, designs, and plans, and will coordinate the formal design review process for all new construction efforts.

a. New construction:
   (1) Shall meet or exceed current codes; and
   (2) Shall include fire sprinkler and fire alarm systems.
b. Existing buildings:
   (1) Shall normally be upgraded to meet current codes as part of the GSFC Construction of Facilities program;
   (2) Shall have fire sprinkler and fire alarm systems added or brought into compliance with codes as part of the Construction of Facilities program, or sooner when possible;
   (3) Shall have proposed facility partition or wall changes, regardless of size, and fire protection system installation and modification, submitted to S&E for approval; and
   (4) Shall maintain internal building fire hose connections in cabinets required by building or fire codes. The fire department will provide hoses when needed.
c. All existing buildings shall avoid the shut-off or outage of any fire suppression or fire alarm system. Where necessary for maintenance or construction, the disruption of service shall be scheduled in advance to minimize risk and time of disruption. Depending on the conditions, fire watches or additional security inspections may be required. Where outages involve sprinkler systems, fire alarm systems, fire hydrants, or other fixed fire equipment, notify the S&E Division, who will notify the fire department as appropriate.

2.2 EAPs

a. Building-specific EAPs will be prepared using GSFC Form 23-62, and will be the responsibility of the building FOM to review and ensure currency. All EAPs will be reviewed annually for accuracy, and will have an expiration date 1 year from date of approval.
b. EAPs will address emergencies that any employee may reasonably expect in the workplace. Examples are fire, medical emergencies, toxic chemical release, tornadoes, blizzards, floods, etc.

The Plan shall be specific to each building and shall include the following:
(1) Evacuation procedures specific for the building;
(2) Special procedures and accommodations for persons with disabilities;
(3) Floor plans or workplace maps that clearly show emergency escape routes;
(4) Descriptions of fire alarm devices, evacuation alarms, and other signaling devices;
(5) Procedures for emergency reporting;
(6) Designation of an Evacuation Management Team and delineation of the responsibilities of each team member, including a building Fire Warden; and
(7) Training requirements and drills.

3. FIRE EXTINGUISHERS

The use of a portable fire extinguisher is permitted only by a person trained in its use.

Portable fire extinguishers must be installed in identified workplaces. Compliance with 29 CFR 1910.157 and NFPA 10 is mandatory for selection, inspection, maintenance, and distribution. FMD has the responsibility for the inspection, maintenance, and testing of fire extinguishers, to ensure that they are in proper working condition and have not been tampered with or damaged.

4. FIRE PREVENTION GUIDELINES

A goal of fire prevention is to reduce or eliminate fire-related hazards that can result in unsafe conditions, injury to personnel, and/or property damage. Where deficiencies are unable to be immediately corrected, other means of mitigating the hazard or modifying the facility or operation to reduce the hazard to a safe level will be implemented.

Among measures that are used to mitigate fire hazards is the implementation in accordance with NFPA 1, NFPA 101, and 29 CFR 1910.22 of effective housekeeping procedures to prevent hazardous accumulations of combustible trash and debris and the maintenance of, access to, and use of emergency exits and fire protection equipment.

Other measures include establishing and maintaining free and unobstructed egress from all parts of the building at all times. Keeping corridors, stairways, and other means of egress clear of storage, and not using the area for recycling bins, copy machines, mail-handling operations, coffee/snack/vending machine areas, or other office operations, help to ensure access.

Exit doors, fire doors, fire sprinkler systems, fire alarm systems, emergency lighting, and other life safety systems and equipment must be fully maintained. No object should be placed in such a manner as to prevent access to or use of fire protection equipment such as fire extinguishers, fire alarm pull stations, fire hydrants, fire hose outlets, and fire department connections.

Trash cans should be provided in sufficient numbers in all areas to facilitate safe containment of combustible trash. Metal waste cans with self-closing lids shall be provided in sufficient numbers in areas where cloth rags or paper towels saturated with oil, paint, ink, or other combustible or flammable liquid may be found (e.g., vehicle repair shops, paint shops, and printing and reproduction areas).

A general clean up should be conducted at the end of each day when activities have occurred that generate a large quantity of combustible trash and debris. All refuse shall be removed from the building daily.

Ensure ongoing housecleaning occurs in all facilities. Focus especially in offices and laboratories where quantities of publications, files, and loose papers are found. Remove all items that no longer serve a useful purpose. In addition, the following safety practices must be followed:

a. New operations or changes in existing operations that involve hazardous materials must be brought to the attention of the S&E Division. These conditions may affect the manner in which the fire department would approach or fight a fire;
b. Never use for storage purposes areas above suspended ceilings and below raised floors;
c. Place trailers further than 25 feet from buildings, tanks, or cooling towers;
d. Do not store portable fueled equipment and cooking equipment under loading docks or other significant structures;
e. Park automobiles only in authorized parking spaces. Fire lanes shall be observed and maintained in accordance with NFPA 1 and NFPA 1141; and
f. Mow or remove grass and ground cover to eliminate fire hazard during dry seasons.

5. FIRE SAFETY INSPECTIONS/HOUSEKEEPING PROCEDURES

5.1 Worksite Surveys

Supervisors are responsible for conducting worksite surveys at least quarterly. These surveys should include observations of worksite safety and housekeeping issues and should specifically address proper storage of chemicals and supplies, unobstructed access to fire extinguishers, and emergency evacuation routes. In addition, they should determine if an emergency action plan is present in work areas and if personnel are familiar with the plan.

5.2 Flammable and Combustible Materials

a. Substitute relatively safe materials for flammable liquids in order to reduce the risk of fires. Any substituted material should be stable and nontoxic and should either be nonflammable or have a high flashpoint;
b. Handle flammable and combustible liquids carefully at all times. The proper storage of flammable liquids within a work area is very important in order to protect personnel from fire and other safety and health hazards;
c. Eliminate all nonessential ignition sources where flammable liquids are used or stored;
d. Do not store flammable liquids with materials that can contribute to a flammable liquid fire; Examples are oxidizers and organic peroxides, which, on decomposition, can generate large amounts of oxygen;
e. Beware that flammable gases pose the same type of fire hazards as flammable liquids and their vapors. Many of the safeguards for flammable liquids also apply to flammable gases, other properties such as toxicity, reactivity, and the degree of corrosiveness also must be taken into account. Also, a gas that is flammable could produce toxic combustion products; and

f. The handling and housekeeping of flammable and combustible liquids shall be in accordance with 29 CFR 1910.106 and NFPA 30.

6. STORAGE

6.1 Corridors and Stairs

a. Corridors and stairs shall not be used for storage;
b. Corridors and stairs shall be continuously maintained free of all obstructions or impediments that would impede full and instant use in the case of fire or other emergency;
c. Furnishings, decorations, or other objects shall not be placed to obstruct corridors or stairs or visibility thereof;
d. Stairs shall not be used for any purpose that has the potential to interfere with its use as an exit;
e. Stairs are prohibited from being used for installation of equipment not necessary for safety; and
f. Stairs shall be maintained free of all fire safety hazards.

6.2 Mechanical and Electrical Rooms

No storage, except for a limited supply of materials necessary to maintain the associated equipment, shall be permitted in mechanical and electrical rooms.

6.3 Penthouses

Penthouses shall be used solely for their designed occupancy as specified in NFPA 101 and the International Building Code. Changes in occupancy use shall be approved by S&E.

6.4 Flammable and Combustible Liquids

Storage of flammable and combustible liquids shall be in accordance with NFPA 1, NFPA 101, NFPA 30 and 29 CFR 1910.106.

7. HOT WORK PERMITS

A Hot Work Permit, GSFC Form 23-4, is required whenever open flame devices or other exothermic devices are to be used in areas not specifically designed for their use. Examples of operations requiring a Hot Work Permit are cutting, welding/brazing, and tar pot operations. Organizations performing hot work will each designate, with concurrence by S&E, Hot Work Representatives to be responsible for this process, and who will have responsibility and authority for issuing Hot Work Permits. The Hot Work Representatives will:

a. Ensure that a safe environment exists before a permit is issued;
b. Consult the appropriate safety experts in 250 when warranted;
c. Ensure that proper approvals and notifications occur when fire detection systems are disabled;
d. Issue the permit, ensuring that the work performer understands the permit requirements;
e. Ensure that the required inspections are performed before and after the work occurs, in accordance with permit requirements;

f. Shut down Hot Work operations when being performed in an unsafe manner, and
g. Ensure that the record copy of the completed permit is properly filed.

7.1 Supervisors of Personnel Performing Work

Supervisors of personnel performing the work shall identify any operations that meet the criteria for Hot Work. They shall ensure that all procedures are followed for obtaining a Hot Work Permit and ensure that an approved permit is available before the work is started.

Supervisors shall ensure that the work area is inspected before beginning work and at least 30 minutes after work is completed, and shut down Hot Work operations when being performed in an unsafe manner. They may sign the final check-up portion of the Hot Work Permit only when pre-coordinated with the issuing Hot Work Representative.

7.2 Personnel Performing Work

Personnel performing Hot Work have the primary responsibility for the safety of the operation. They shall not start Hot Work until the permit has been properly issued and is available at the work site. They shall follow all requirements of the Hot Work Permit.

7.3 Fire Watch

Personnel performing fire watch duties shall remain in the watch area during the entire time work is being performed. They shall be instructed in locations of fire alarms and the use of fire extinguishers.

7.4 Hot Work Requirements

a. Normal Hot Work hours are from 6:30 a.m. to 3:30 p.m., Monday through Friday. Approval for other hours must be requested in writing, at least 24 hours in advance, from the issuing organization.
b. All precautions listed on the Hot Work Permit must be followed.
c. Hot Work Permits can only cover one type of Hot Work, e.g., a permit for welding may not also include tar pot operations.
d. A permit is not limited to a single day. Where a Hot Work operation extends over several consecutive days, a single permit may cover the operation for up to 5 days under the following conditions:
   (1) The required inspections are performed before beginning work each day;
   (2) The required inspections are performed after Hot Work operations each day;
   (3) A log sheet will be attached to the permit showing the permit description and dates, and will contain, for each day, the pre- and post-work inspection certification, starting time, and ending time. Form 23-4A is used for this purpose.
e. Hot Work Permits will not be issued when the work area:
   (1) Contains unprotected flammable or combustible materials,
   (2) Is an explosive environment.
f. Hot Work Permits will not be approved for work on previously used tanks or drums without a hazard analysis performed by a GSFC safety engineer from Code 250.

g. When specified by the permit, a dedicated fire watch must be provided during the work and for a minimum of 30 minutes afterward to watch for ignition. The fire watch must be familiar with the area's emergency reporting procedures and be knowledgeable in the use of the building's fire suppression equipment. For work on walls, floors, or ceilings, a fire watch must be provided on both sides of the barrier. The fire watch is required to sign the final inspection certification on the Hot Work Permit.

In the event of a fire, the fire watch shall leave the building when the building evacuation alarm is sounded.

h. A minimum of one 20-lb ABC dry chemical fire extinguisher must be provided at the work site. More protection may be required by the permit issuer if necessary. Fire extinguishers provided for normal building use are not to be used for this requirement.
i. The work area must be free of flammables and combustibles, or they must be moved at least 35 feet from the heat source and protected.
j. When necessary, fire detection and/or suppression systems in the work area may be disabled before the work is performed. This must be requested in writing through the use of established outage procedures. A Fire Watch may be required.
k. All fires, no matter how small, must be reported to the Emergency Console by dialing 911. This includes fires that have been extinguished.

8. REQUEST FOR DEVIATIONS

Written request for deviations to the provisions of this GPR shall be submitted to the Chief, S&E Division for action. The deviation request must be routed through the requesting organization's management chain (including Director of) before forwarding to the S&E Division. Deviations must include the reason for non-compliance, alternative procedures to assure safety, and the expected duration of the deviation. If the S&E Division agrees with the deviation, it will be forwarded to the Center Director for consideration. The approval process will follow NPR 8715.3 Safety Variance requirements and will be forwarded to NASA Headquarters safety as required.

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	08/24/04	Initial Release